



# Analytical Laboratory

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13339 Hagers Ferry Road  
Huntersville, NC 28078-7929  
McGuire Nuclear Complex - MG03A2  
Phone: 980-875-5245 Fax: 980-875-4349

## Order Summary Report

**Order Number:** J13050177

Project Name: Flex Fuel Absorber 2

Customer Name(s): Bill Kennedy, Wayne Chapman

Customer Address: 3195 Pine Hall Rd  
Mailcode: Belews Steam Station  
Belews Creek, NC 28012

Lab Contact: Jason C Perkins Phone: 980-875-5348

**Report Authorized By:** \_\_\_\_\_ **Date:** 6/10/2013  
(Signature) Jason C Perkins

### Program Comments:

Please contact the Program Manager (Jason C Perkins) with any questions regarding this report.

### Data Flags & Calculations:

Any analytical tests or individual analytes within a test flagged with a Qualifier indicate a deviation from the method quality system or quality control requirement. The qualifier description is found at the end of the Certificate of Analysis (sample results) under the qualifiers heading. All results are reported on a dry weight basis unless otherwise noted. Subcontracted data included on the Duke Certificate of Analysis is to be used as information only. Certified vendor results can be found in the subcontracted lab final report. Duke Energy Analytical Laboratory subcontracts analyses to other vendor laboratories that have been qualified by Duke Energy to perform these analyses except where noted.

### Data Package:

This data package includes analytical results that are applicable only to the samples described in this narrative. An estimation of the uncertainty of measurement for the results in the report is available upon request. This report shall not be reproduced, except in full, without the written consent of the Analytical Laboratory. Please contact the Analytical laboratory with any questions. The order of individual sections within this report is as follows:

*Job Summary Report, Sample Identification, Technical Validation of Data Package, Analytical Laboratory Certificate of Analysis, Analytical Laboratory QC Reports, Sub-contracted Laboratory Results, Customer Specific Data Sheets, Reports & Documentation, Customer Database Entries, Test Case Narratives, Chain of Custody (COC)*

### Certification:

The Analytical Laboratory holds the following State Certifications : North Carolina (DENR) Certificate #248, South Carolina (DHEC) Laboratory ID # 99005. Contact the Analytical Laboratory for definitive information about the certification status of specific methods.

**Sample ID's & Descriptions:**

Sample ID	Plant/Station	Collection Date and Time	Collected By	Sample Description
2013010513	BELEWS	08-May-13 6:00 AM	W. Chapman	MAKE UP WATER
2013010514	BELEWS	08-May-13 5:30 AM	W. Chapman	REAGENT FEED TANK LIQ
2013010515	BELEWS	08-May-13 5:30 AM	W. Chapman	REAGENT FEED TANK SOL
2013010516	BELEWS	08-May-13 5:35 AM	W. Chapman	2A ABS PRIM CLASS FEED LIQ
2013010517	BELEWS	08-May-13 5:35 AM	W. Chapman	2A ABS PRIM CLASS FEED SOL
2013010518	BELEWS	08-May-13 5:45 AM	W. Chapman	2B ABS PRIM CLASS FEED LIQ
2013010519	BELEWS	08-May-13 5:45 AM	W. Chapman	2B ABS PRIM CLASS FEED SOL
2013010520	BELEWS	08-May-13 5:00 AM	W. Chapman	GYPSUM CAKE BELT
2013010521	BELEWS	08-May-13 5:20 AM	W. Chapman	2A ABS PURGE LIQUIDS
2013010522	BELEWS	08-May-13 5:20 AM	W. Chapman	2A ABS PURGE SOLIDS
10 Total Samples				

## Technical Validation Review

### Checklist:

COC and .pdf report are in agreement with sample totals and analyses (compliance programs and procedures).

☒ Yes☐ No

All Results are less than the laboratory reporting limits.

☐ Yes☒ No

All laboratory QA/QC requirements are acceptable.

☒ Yes☐ No

### Report Sections Included:

☒ Job Summary Report☒ Sample Identification☒ Technical Validation of Data Package☒ Analytical Laboratory Certificate of Analysis☐ Analytical Laboratory QC Report☒ Sub-contracted Laboratory Results☐ Customer Specific Data Sheets, Reports, & Documentation☐ Customer Database Entries☒ Chain of Custody☒ Electronic Data Deliverable (EDD) Sent Separately

Reviewed By: DBA Account

Date: 6/10/2013

# Certificate of Laboratory Analysis

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*This report shall not be reproduced, except in full.***Order # J13050177**

Site: MAKE UP WATER

Collection Date: 08-May-13 6:00 AM

**Sample #: 2013010513**

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>ALKALINITY - (Analysis Performed by Prism Labs)</u></b>								
Vendor Parameter	Complete					Vendor Method		V_PRISM
<b><u>INORGANIC IONS BY IC</u></b>								
Bromide	< 0.1	mg/L		0.1	1	EPA 300.0	05/13/2013 20:12	JAHERMA
Chloride	8.1	mg/L		0.1	1	EPA 300.0	05/13/2013 20:12	JAHERMA
Fluoride	0.41	mg/L		0.1	1	EPA 300.0	05/13/2013 20:12	JAHERMA
Sulfate	13	mg/L		1	10	EPA 300.0	05/13/2013 20:12	JAHERMA
<b><u>Mercury by EPA 200.8 - (Analysis Performed by Applied Speciation and Consulting, LLC)</u></b>								
Vendor Parameter	Complete	ug/l				Vendor Method		V_AS&C
<b><u>TOTAL RECOVERABLE METALS BY ICP</u></b>								
Boron (B)	0.077	mg/L		0.05	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Calcium (Ca)	10.0	mg/L		0.01	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Iron (Fe)	0.057	mg/L		0.01	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Magnesium (Mg)	3.54	mg/L		0.005	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Manganese (Mn)	0.011	mg/L		0.005	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Potassium (K)	3.56	mg/L		0.1	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Sodium (Na)	6.67	mg/L		0.05	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Strontium (Sr)	0.073	mg/L		0.005	1	EPA 200.7	05/17/2013 12:22	DJSULL1
<b><u>TOTAL RECOVERABLE METALS BY ICP-MS</u></b>								
Aluminum (Al)	40.1	ug/L		2	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Antimony (Sb)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Arsenic (As)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Beryllium (Be)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Cadmium (Cd)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Chromium (Cr)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Cobalt (Co)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Lead (Pb)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Nickel (Ni)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Selenium (Se)	4.01	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
<b><u>TOTAL DISSOLVED SOLIDS</u></b>								
TDS	86	mg/L		25	1	SM2540C	05/14/2013 16:45	JDTALLE
<b><u>TOTAL SUSPENDED SOLIDS</u></b>								
TSS	< 5	mg/L		5	1	SM2540D	05/15/2013 13:27	SWILLI3

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Site: REAGENT FEED TANK LIQ

Collection Date: 08-May-13 5:30 AM

Sample #: 2013010514

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>INORGANIC IONS BY IC</u></b>								
Bromide	0.21	mg/L		0.1	1	EPA 300.0	05/13/2013 20:31	JAHERMA
Chloride	22	mg/L		1	10	EPA 300.0	05/13/2013 20:31	JAHERMA
Fluoride	0.30	mg/L		0.1	1	EPA 300.0	05/13/2013 20:31	JAHERMA
Sulfate	43	mg/L		1	10	EPA 300.0	05/13/2013 20:31	JAHERMA
<b><u>MERCURY (COLD VAPOR) IN WATER</u></b>								
Mercury (Hg)	< 2.5	ug/L		2.5	50	EPA 245.1	05/16/2013 14:16	AGIBBS
<b><u>TOTAL RECOVERABLE METALS BY ICP</u></b>								
Boron (B)	< 0.5	mg/L		0.5	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Calcium (Ca)	32.5	mg/L		0.1	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Iron (Fe)	< 0.1	mg/L		0.1	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Magnesium (Mg)	4.87	mg/L		0.05	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Manganese (Mn)	< 0.05	mg/L		0.05	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Potassium (K)	7.47	mg/L		1	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Sodium (Na)	13.6	mg/L		0.5	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Strontium (Sr)	0.269	mg/L		0.05	10	EPA 200.7	05/17/2013 12:26	DJSULL1
<b><u>TOTAL RECOVERABLE METALS BY ICP-MS</u></b>								
Aluminum (Al)	35.0	ug/L		2	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Antimony (Sb)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Arsenic (As)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Beryllium (Be)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Cadmium (Cd)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Chromium (Cr)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Cobalt (Co)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Lead (Pb)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Nickel (Ni)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Selenium (Se)	< 1	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1

Site: REAGENT FEED TANK SOL

Collection Date: 08-May-13 5:30 AM

Sample #: 2013010515

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>Dionex Analysis of Gypsum Leachate</u></b>								
Bromide	< 10	mg/kg		10	1	CS-3612 M-2	05/16/2013 11:22	BGN9034
Chloride	< 10	mg/kg		10	1	CS-3612 M-2	05/16/2013 11:22	BGN9034
Fluoride	< 10	mg/kg		10	1	CS-3612 M-2	05/16/2013 11:22	BGN9034
Sulfate	95	mg/kg		10	1	CS-3612 M-2	05/16/2013 11:22	BGN9034

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Site: REAGENT FEED TANK SOL

Collection Date: 08-May-13 5:30 AM

Sample #: 2013010515

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>TOTAL METALS BY ICP</u></b>								
Aluminum (Al)	691	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Antimony (Sb)	< 20	mg/Kg		20	10	SW 6010C	05/16/2013 10:08	MHH7131
Arsenic (As)	< 13	mg/Kg		13	10	SW 6010C	05/16/2013 10:08	MHH7131
Beryllium (Be)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Boron (B)	< 33	mg/Kg		33	10	SW 6010C	05/16/2013 10:08	MHH7131
Cadmium (Cd)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Calcium (Ca)	377000	mg/Kg		13	20	SW 6010C	05/16/2013 10:08	MHH7131
Chromium (Cr)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Cobalt (Co)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Copper (Cu)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Iron (Fe)	1220	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:08	MHH7131
Lead (Pb)	< 20	mg/Kg		20	10	SW 6010C	05/16/2013 10:08	MHH7131
Magnesium (Mg)	3920	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Manganese (Mn)	43.2	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Nickel (Ni)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Potassium (K)	286	mg/Kg		67	10	SW 6010C	05/16/2013 10:08	MHH7131
Selenium (Se)	< 20	mg/Kg		20	10	SW 6010C	05/16/2013 10:08	MHH7131
Strontium (Sr)	235	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131

**METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)**

Vendor Parameter	Complete	Vendor Method	V_SGS
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Site: 2A ABS PRIM CLASS FEED LIQ

Collection Date: 08-May-13 5:35 AM

Sample #: 2013010516

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>ALKALINITY - (Analysis Performed by Prism Labs)</u></b>								
Vendor Parameter	Complete					Vendor Method		V_PRISM
<b><u>INORGANIC IONS BY IC</u></b>								
Bromide	91	mg/L		10	100	EPA 300.0	05/13/2013 19:16	JAHERMA
Chloride	6600	mg/L		100	1000	EPA 300.0	05/13/2013 19:16	JAHERMA
Fluoride	13	mg/L		10	100	EPA 300.0	05/13/2013 19:16	JAHERMA
Sulfate	1300	mg/L		100	1000	EPA 300.0	05/13/2013 19:16	JAHERMA

**MERCURY (COLD VAPOR) IN WATER**

Mercury (Hg)	< 2.5	ug/L		2.5	50	EPA 245.1	05/16/2013 14:18	AGIBBS
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Site: 2A ABS PRIM CLASS FEED LIQ

Collection Date: 08-May-13 5:35 AM

Sample #: 2013010516

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b>TOTAL RECOVERABLE METALS BY ICP</b>								
Boron (B)	177	mg/L		0.5	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Calcium (Ca)	3120	mg/L		0.1	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Iron (Fe)	< 0.1	mg/L		0.1	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Magnesium (Mg)	764	mg/L		0.05	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Manganese (Mn)	8.82	mg/L		0.05	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Potassium (K)	20.4	mg/L		1	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Sodium (Na)	39.7	mg/L		0.5	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Strontium (Sr)	10.3	mg/L		0.05	10	EPA 200.7	05/17/2013 12:30	DJSULL1

**TOTAL RECOVERABLE METALS BY ICP-MS**

Aluminum (Al)	109	ug/L		20	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Antimony (Sb)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Arsenic (As)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Beryllium (Be)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Cadmium (Cd)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Chromium (Cr)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Cobalt (Co)	40.1	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Lead (Pb)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Nickel (Ni)	124	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Selenium (Se)	497	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1

**SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)**

Vendor Parameter	Complete	Vendor Method	V_AS&C
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**TOTAL DISSOLVED SOLIDS**

TDS	16000	mg/L		25	1	SM2540C	05/14/2013 16:45	JDTALLE
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Site: 2A ABS PRIM CLASS FEED SOL

Collection Date: 08-May-13 5:35 AM

Sample #: 2013010517

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b>Dionex Analysis of Gypsum Leachate</b>								
Bromide	< 200	mg/kg		200	20	CS-3612 M-2	05/16/2013 14:50	BGN9034
Chloride	280	mg/kg		200	20	CS-3612 M-2	05/16/2013 14:50	BGN9034
Fluoride	250	mg/kg		200	20	CS-3612 M-2	05/16/2013 14:50	BGN9034
Sulfate	140000	mg/kg		2000	200	CS-3612 M-2	05/16/2013 14:50	BGN9034

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Site: 2A ABS PRIM CLASS FEED SOL

Collection Date: 08-May-13 5:35 AM

**Sample #: 2013010517**

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>TOTAL METALS BY ICP</u></b>								
Aluminum (Al)	919	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Antimony (Sb)	< 20	mg/Kg		20	10	SW 6010C	05/16/2013 10:12	MHH7131
Arsenic (As)	< 13	mg/Kg		13	10	SW 6010C	05/16/2013 10:12	MHH7131
Beryllium (Be)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Boron (B)	< 33	mg/Kg		33	10	SW 6010C	05/16/2013 10:12	MHH7131
Cadmium (Cd)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Calcium (Ca)	157000	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:12	MHH7131
Chromium (Cr)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Cobalt (Co)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Copper (Cu)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Iron (Fe)	912	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:12	MHH7131
Lead (Pb)	< 20	mg/Kg		20	10	SW 6010C	05/16/2013 10:12	MHH7131
Magnesium (Mg)	728	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Manganese (Mn)	5.31	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Nickel (Ni)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Potassium (K)	368	mg/Kg		67	10	SW 6010C	05/16/2013 10:12	MHH7131
Selenium (Se)	20.7	mg/Kg		20	10	SW 6010C	05/16/2013 10:12	MHH7131
Strontium (Sr)	84.1	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131

**METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)**

Vendor Parameter	Complete	Vendor Method	V_SGS
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Site: 2B ABS PRIM CLASS FEED LIQ

Collection Date: 08-May-13 5:45 AM

**Sample #: 2013010518**

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>ALKALINITY - (Analysis Performed by Prism Labs)</u></b>								
Vendor Parameter	Complete					Vendor Method		V_PRISM
<b><u>INORGANIC IONS BY IC</u></b>								
Bromide	83	mg/L		10	100	EPA 300.0	05/13/2013 19:35	JAHERMA
Chloride	6100	mg/L		100	1000	EPA 300.0	05/13/2013 19:35	JAHERMA
Fluoride	14	mg/L		10	100	EPA 300.0	05/13/2013 19:35	JAHERMA
Sulfate	1300	mg/L		100	1000	EPA 300.0	05/13/2013 19:35	JAHERMA

**MERCURY (COLD VAPOR) IN WATER**

Mercury (Hg)	< 2.5	ug/L		2.5	50	EPA 245.1	05/16/2013 14:21	AGIBBS
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Site: 2B ABS PRIM CLASS FEED LIQ

Collection Date: 08-May-13 5:45 AM

Sample #: 2013010518

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b>TOTAL RECOVERABLE METALS BY ICP</b>								
Boron (B)	163	mg/L		0.5	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Calcium (Ca)	2900	mg/L		0.1	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Iron (Fe)	< 0.1	mg/L		0.1	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Magnesium (Mg)	717	mg/L		0.05	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Manganese (Mn)	8.18	mg/L		0.05	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Potassium (K)	19.7	mg/L		1	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Sodium (Na)	37.8	mg/L		0.5	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Strontium (Sr)	9.69	mg/L		0.05	10	EPA 200.7	05/17/2013 12:34	DJSULL1

**TOTAL RECOVERABLE METALS BY ICP-MS**

Aluminum (Al)	261	ug/L		20	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Antimony (Sb)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Arsenic (As)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Beryllium (Be)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Cadmium (Cd)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Chromium (Cr)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Cobalt (Co)	40.5	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Lead (Pb)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Nickel (Ni)	134	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Selenium (Se)	410	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1

**SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)**

Vendor Parameter	Complete	Vendor Method	V_AS&C
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**TOTAL DISSOLVED SOLIDS**

TDS	15000	mg/L		25	1	SM2540C	05/14/2013 16:45	JDTALLE
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Site: 2B ABS PRIM CLASS FEED SOL

Collection Date: 08-May-13 5:45 AM

Sample #: 2013010519

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b>Dionex Analysis of Gypsum Leachate</b>								
Bromide	< 200	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:09	BGN9034
Chloride	420	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:09	BGN9034
Fluoride	380	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:09	BGN9034
Sulfate	140000	mg/kg		2000	200	CS-3612 M-2	05/16/2013 15:09	BGN9034

# Certificate of Laboratory Analysis

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*This report shall not be reproduced, except in full.***Order # J13050177**

Site: 2B ABS PRIM CLASS FEED SOL

Collection Date: 08-May-13 5:45 AM

Sample #: **2013010519**

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>TOTAL METALS BY ICP</u></b>								
Aluminum (Al)	<b>1010</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Antimony (Sb)	<b>&lt; 20</b>	mg/Kg		20	10	SW 6010C	05/16/2013 10:16	MHH7131
Arsenic (As)	<b>&lt; 13</b>	mg/Kg		13	10	SW 6010C	05/16/2013 10:16	MHH7131
Beryllium (Be)	<b>&lt; 3.3</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Boron (B)	<b>&lt; 33</b>	mg/Kg		33	10	SW 6010C	05/16/2013 10:16	MHH7131
Cadmium (Cd)	<b>&lt; 3.3</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Calcium (Ca)	<b>157000</b>	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:16	MHH7131
Chromium (Cr)	<b>&lt; 3.3</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Cobalt (Co)	<b>&lt; 3.3</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Copper (Cu)	<b>&lt; 3.3</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Iron (Fe)	<b>984</b>	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:16	MHH7131
Lead (Pb)	<b>&lt; 20</b>	mg/Kg		20	10	SW 6010C	05/16/2013 10:16	MHH7131
Magnesium (Mg)	<b>702</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Manganese (Mn)	<b>5.63</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Nickel (Ni)	<b>&lt; 3.3</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Potassium (K)	<b>410</b>	mg/Kg		67	10	SW 6010C	05/16/2013 10:16	MHH7131
Selenium (Se)	<b>&lt; 20</b>	mg/Kg		20	10	SW 6010C	05/16/2013 10:16	MHH7131
Strontium (Sr)	<b>84.2</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131

**METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)**

Vendor Parameter	<b>Complete</b>	Vendor Method	V_SGS
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Site: GYPSUM CAKE BELT

Collection Date: 08-May-13 5:00 AM

Sample #: **2013010520**

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>Dionex Analysis of Gypsum Leachate</u></b>								
Bromide	<b>&lt; 200</b>	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:28	BGN9034
Chloride	<b>&lt; 200</b>	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:28	BGN9034
Fluoride	<b>200</b>	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:28	BGN9034
Sulfate	<b>140000</b>	mg/kg		2000	200	CS-3612 M-2	05/16/2013 15:28	BGN9034

# Certificate of Laboratory Analysis

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*This report shall not be reproduced, except in full.***Order # J13050177**

Site: GYPSUM CAKE BELT

Collection Date: 08-May-13 5:00 AM

Sample #: 2013010520

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>TOTAL METALS BY ICP</u></b>								
Aluminum (Al)	507	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Antimony (Sb)	< 20	mg/Kg		20	10	SW 6010C	05/16/2013 10:20	MHH7131
Arsenic (As)	< 13	mg/Kg		13	10	SW 6010C	05/16/2013 10:20	MHH7131
Beryllium (Be)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Boron (B)	< 33	mg/Kg		33	10	SW 6010C	05/16/2013 10:20	MHH7131
Cadmium (Cd)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Calcium (Ca)	141000	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:20	MHH7131
Chromium (Cr)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Cobalt (Co)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Copper (Cu)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Iron (Fe)	526	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:20	MHH7131
Lead (Pb)	< 20	mg/Kg		20	10	SW 6010C	05/16/2013 10:20	MHH7131
Magnesium (Mg)	480	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Manganese (Mn)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Nickel (Ni)	< 3.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Potassium (K)	192	mg/Kg		67	10	SW 6010C	05/16/2013 10:20	MHH7131
Selenium (Se)	< 20	mg/Kg		20	10	SW 6010C	05/16/2013 10:20	MHH7131
Strontium (Sr)	75.3	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131

**METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)**

Vendor Parameter	Complete	Vendor Method	V_SGS
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Site: 2A ABS PURGE LIQUIDS

Collection Date: 08-May-13 5:20 AM

Sample #: 2013010521

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>ALKALINITY - (Analysis Performed by Prism Labs)</u></b>								
Vendor Parameter	Complete					Vendor Method		V_PRISM
<b><u>INORGANIC IONS BY IC</u></b>								
Bromide	89	mg/L		10	100	EPA 300.0	05/13/2013 19:54	JAHERMA
Chloride	6400	mg/L		100	1000	EPA 300.0	05/13/2013 19:54	JAHERMA
Fluoride	11	mg/L		10	100	EPA 300.0	05/13/2013 19:54	JAHERMA
Sulfate	1300	mg/L		100	1000	EPA 300.0	05/13/2013 19:54	JAHERMA

**MERCURY (COLD VAPOR) IN WATER**

Mercury (Hg)	< 2.5	ug/L		2.5	50	EPA 245.1	05/16/2013 14:23	AGIBBS
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# Certificate of Laboratory Analysis

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Site: 2A ABS PURGE LIQUIDS

Collection Date: 08-May-13 5:20 AM

Sample #: 2013010521

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>TOTAL RECOVERABLE METALS BY ICP</u></b>								
Boron (B)	175	mg/L		0.5	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Calcium (Ca)	2910	mg/L		0.1	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Iron (Fe)	< 0.1	mg/L		0.1	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Magnesium (Mg)	761	mg/L		0.05	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Manganese (Mn)	8.60	mg/L		0.05	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Potassium (K)	20.1	mg/L		1	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Sodium (Na)	39.3	mg/L		0.5	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Strontium (Sr)	9.87	mg/L		0.05	10	EPA 200.7	05/17/2013 12:38	DJSULL1

**TOTAL RECOVERABLE METALS BY ICP-MS**

Aluminum (Al)	24.6	ug/L		20	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Antimony (Sb)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Arsenic (As)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Beryllium (Be)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Cadmium (Cd)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Chromium (Cr)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Cobalt (Co)	39.3	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Lead (Pb)	< 10	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Nickel (Ni)	123	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Selenium (Se)	235	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1

**SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)**

Vendor Parameter	Complete	Vendor Method	V_AS&C
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**TOTAL DISSOLVED SOLIDS**

TDS	16000	mg/L		25	1	SM2540C	05/14/2013 16:45	JDTALLE
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**TOTAL SUSPENDED SOLIDS**

TSS	4000	mg/L		71.4	1	SM2540D	05/15/2013 13:27	SWILLI3
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Site: 2A ABS PURGE SOLIDS

Collection Date: 08-May-13 5:20 AM

Sample #: 2013010522

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>Dionex Analysis of Gypsum Leachate</u></b>								
Bromide	< 200	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:47	BGN9034
Chloride	1900	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:47	BGN9034
Fluoride	450	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:47	BGN9034
Sulfate	140000	mg/kg		2000	200	CS-3612 M-2	05/16/2013 15:47	BGN9034

# Certificate of Laboratory Analysis

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Site: 2A ABS PURGE SOLIDS

**Sample #: 2013010522**

Collection Date: 08-May-13 5:20 AM

Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<b><u>TOTAL METALS BY ICP</u></b>								
Aluminum (Al)	<b>21000</b>	mg/Kg		6.7	20	SW 6010C	05/16/2013 10:24	MHH7131
Antimony (Sb)	<b>&lt; 20</b>	mg/Kg		20	10	SW 6010C	05/16/2013 10:24	MHH7131
Arsenic (As)	<b>27.8</b>	mg/Kg		13	10	SW 6010C	05/16/2013 10:24	MHH7131
Beryllium (Be)	<b>&lt; 3.3</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Boron (B)	<b>164</b>	mg/Kg		33	10	SW 6010C	05/16/2013 10:24	MHH7131
Cadmium (Cd)	<b>&lt; 3.3</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Calcium (Ca)	<b>156000</b>	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:24	MHH7131
Chromium (Cr)	<b>51.7</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Cobalt (Co)	<b>5.55</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Copper (Cu)	<b>17.0</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Iron (Fe)	<b>20100</b>	mg/Kg		13	20	SW 6010C	05/16/2013 10:24	MHH7131
Lead (Pb)	<b>&lt; 20</b>	mg/Kg		20	10	SW 6010C	05/16/2013 10:24	MHH7131
Magnesium (Mg)	<b>6980</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Manganese (Mn)	<b>109</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Nickel (Ni)	<b>18.8</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Potassium (K)	<b>9020</b>	mg/Kg		67	10	SW 6010C	05/16/2013 10:24	MHH7131
Selenium (Se)	<b>510</b>	mg/Kg		20	10	SW 6010C	05/16/2013 10:24	MHH7131
Strontium (Sr)	<b>109</b>	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131

**METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)**

Vendor Parameter

**Complete**

Vendor Method

V\_SGS

May 28, 2013

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Duke Energy  
13339 Hagers Ferry Road  
Bldg 7405 // MG03A2  
Huntersville, NC 28078  
USA

Client Sample ID: 2013010515  
Date Received: 05/17/2013  
Matrix: Unknown

Date Sampled : 05/08/2013  
P. O. # : 148676  
Project Name/# : Belews Creek (Flex Fuel  
Absorber 2)  
Sample ID : LIMS #13050177  
Sample ID : Reagent Feed Tank Solids  
Time Sampled : 0530

SGS Minerals Sample ID: 072-68523-001

### Tests

Acid Insoluble Residue  
Mercury, Total

Result Unit  
0.39 %  
<0.02 mg/Kg

Method  
ASTM C 471  
SW7473

Method Reference(s):

"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

SGS North America Inc. Minerals Services Division  
4665 Paris St Suite B-200 Denver CO 80239



Somer Rodriguez, Denver Laboratory

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May 28, 2013

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Duke Energy  
13339 Hagers Ferry Road  
Bldg 7405 // MG03A2  
Huntersville, NC 28078  
USA

Client Sample ID: 2013010517  
Date Received: 05/17/2013  
Matrix: Unknown

Date Sampled : 05/08/2013  
P. O. # : 148676  
Project Name/# : Belews Creek (Flex Fuel  
Absorber 2)  
Sample ID : 2A Abs. Primary Class Feed  
Solids  
Sample ID : LIMS # J13050177  
Time Sampled : 0535

SGS Minerals Sample ID: 072-68523-002

### Tests

Acid Insoluble Residue  
Mercury, Total

Result Unit  
1.68 %  
1 mg/Kg

Method  
ASTM C 471  
SW7473

### Method Reference(s):

"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

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May 28, 2013

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Duke Energy  
13339 Hagers Ferry Road  
Bldg 7405 // MG03A2  
Huntersville, NC 28078  
USA

Client Sample ID: 2013010519  
Date Received: 05/17/2013  
Matrix: Unknown

Date Sampled : 05/08/2013  
P. O. # : 148676  
Project Name/# : Belews Creek (Flex Fuel  
Absorber 2)  
Sample ID : 2B Abs. Primary Class  
Feed-Solids  
Sample ID : LIMS # J13050177  
Time Sampled : 0545

SGS Minerals Sample ID: 072-68523-003

### Tests

Acid Insoluble Residue  
Mercury, Total

Result Unit  
1.11 %  
1 mg/Kg

Method  
ASTM C 471  
SW7473

### Method Reference(s):

"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

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Duke Energy  
13339 Hagers Ferry Road  
Bldg 7405 // MG03A2  
Huntersville, NC 28078  
USA

**Client Sample ID:** 2013010520  
**Date Received:** 05/17/2013  
**Matrix:** Unknown

**Date Sampled :** 05/08/2013  
**P. O. # :** 148676  
**Project Name/# :** Belews Creek (Flex Fuel Absorber 2)  
**Sample ID :** Gypsum Cake--Belt  
**Sample ID :** LIMS # J13050177  
**Time Sampled :** 0500

**SGS Minerals Sample ID: 072-68523-004**

<u>Tests</u>	<u>Result</u> <u>Unit</u>	<u>Method</u>
Acid Insoluble Residue	1.00 %	ASTM C 471
Mercury, Total	0.71 mg/Kg	SW7473

Method Reference(s):

"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

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May 28, 2013

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Duke Energy  
13339 Hagers Ferry Road  
Bldg 7405 // MG03A2  
Huntersville, NC 28078  
USA

Client Sample ID: 2013010522  
Date Received: 05/17/2013  
Matrix: Unknown

Date Sampled : 05/08/2013  
P. O. # : 148676  
Project Name/# : Belews Creek (Flex Fuel  
Absorber 2)  
Sample ID : #1 Abs. Purge Solids  
Sample ID : LIMS # J13050177  
Time Sampled : 0520

SGS Minerals Sample ID: 072-68523-005

### Tests

Acid Insoluble Residue  
Mercury, Total

Result Unit  
0.73 %  
35 mg/Kg

Method  
ASTM C 471  
SW7473

Method Reference(s):

"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

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CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy Analytical Laboratory  
Mail Code MGOJAZ (Building 7406)  
13339 Hagers Ferry Rd  
Huntersville, N. C. 28078  
Phone: (704) 876-8245  
Fax: (704) 876-4345

Customer must complete

Project Name	Bellevue Creek (For Fuel Absorber 2)	Phone No:
Client	Wayne Chapman, Bill Kennedy	4Fax No:
Business Unit	BMCEFGD	Mail Code:
Order Unit	BC00	Spec. Type:
		19Mach By ID:

LAB USE ONLY	Se Specification Bottle	13 Sample Description or ID
Lab ID	ID	
203010513		Make Up Water
203010514		Reagent Feed Tank " " - Liquid
203010515		Reagent Feed Tank " " - Solids
203010516		2A Abs. Primary Class Feed - Liquid
203010517		2A Abs. Primary Class Feed - Solids
203010518		2B Abs. Primary Class Feed - Liquid
203010519		2B Abs. Primary Class Feed - Solids
203010520		Gypsum Cake - " " Bell
203010521		#1 Abs. Purple - Liquid
203010522		#1 Abs. Purple - Solids

Date	Time	Signature	17 Comp.	18 Grab	Metals* and Hg 245.1	Anions**	Solids =% inerts, Hg-metals ven. (V_SGS)	TDS	Se Specification (ASC)	Hg 200.8 - (V-ASC)
5-8-13	0600	W. Chapman			1*	1				1
5-8-13	0530	W. Chapman			1*	1				
5-8-13	0530	W. Chapman			1*	1				
5-8-13	0535	W. Chapman			1*	1				
5-8-13	0535	W. Chapman			1*	1				
5-8-13	0545	W. Chapman			1*	1				
5-8-13	0545	W. Chapman			1*	1				
5-8-13	0500	W. Chapman			1*	1				
5-8-13	0520	W. Chapman			1*	1				
5-8-13	0520	W. Chapman			1*	1				

SGS - Denver  
PO# 148676  
AS&C  
PO# 133241

PRISM  
PO# 144725

Appropriate non-shaded areas.

17 Comp. 18 Grab

Metals\* and Hg 245.1

Anions\*\*

Solids =% inerts, Hg-metals ven. (V\_SGS)

TDS

Se Specification (ASC)

Hg 200.8 - (V-ASC)

AI Hg

072-68523-003

2013010519

Duke Energy

Huntersville

Due 05/28/2013

Rec 05/17/2013

072-68523-001

2013010515

Duke Energy

Huntersville

Due 05/28/2013

Rec 05/17/2013

21 Requested Turnaround

21 Days x 9in-house

7 Days

48 Hr

Vendor Lab 13 Days X

5-22-13

Metals\* Water (ICP/TRM=B, Ca, Fe, Mg, Mn, K, Na, Sr, IMS/TRM=SB, Al, As, Be, Cd, Cr, Co, Ni, Pb, Se, and 1\* No Hg 245.1)  
Anions\*\* Water (IC=Br, Cl, F, SO4)  
1\* Solids ICP/SED=Al, Sb, As, Be, B, Ca, Cd, Cr, Cu, Co, Fe, K, Mg, Mn, Ni, Pb, Se, Sr)  
1\* % Solids/pum and Dion GYP for Br, Cl, F, SO4



Full-Service Analytical &  
Environmental Solutions

NC Certification No. 402  
SC Certification No. 99012  
NC Drinking Water Cert No. 37735  
VA Certification No. 460211  
DoD ELAP Certification No. L2307

## Case Narrative

05/20/2013

Duke Energy Corporation  
Jay Perkins  
13339 Hagers Ferry Road  
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2) Absorber 2  
Project No.: J13050177  
Lab Submittal Date: 05/09/2013  
Prism Work Order: 3050229

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

Please call if you have any questions relating to this analytical report.

Respectfully,

**PRISM LABORATORIES, INC.**

Angela D. Overcash

VP Laboratory Services

Reviewed By Steven H. Guptill For Angela D. Overcash  
Project Manager

### Data Qualifiers Key Reference:

HT	Sample received and analyzed outside of the hold time.
BRL	Below Reporting Limit
MDL	Method Detection Limit
RPD	Relative Percent Difference
*	Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.



Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
2013010513/Make Up Water	3050229-01	Water	05/08/13	05/09/13
2013010516/2A Abs. Primary Class Fee	3050229-02	Water	05/08/13	05/09/13
2013010518/2B Abs. Primary Class Fee	3050229-03	Water	05/08/13	05/09/13
2013010521/#1 Abs. Purge -- Liquid	3050229-04	Water	05/08/13	05/09/13

Samples received in good condition at 4.1 degrees C unless otherwise noted.



Duke Energy Corporation  
Attn: Jay Perkins  
13339 Hagers Ferry Road  
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)  
Absorber 2  
Project No.: J13050177  
Sample Matrix: Water

Client Sample ID: 2013010513/Make Up Water  
Prism Sample ID: 3050229-01  
Prism Work Order: 3050229  
Time Collected: 05/08/13 06:00  
Time Submitted: 05/09/13 14:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>General Chemistry Parameters</b>									
pH	7.2 HT	pH Units			1	*SM4500-H B	5/10/13 15:30	JAB	P3E0210
Total Alkalinity	35	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0386
Carbonate Alkalinity	BRL	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0387
Bicarbonate Alkalinity	35	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0388



Duke Energy Corporation  
Attn: Jay Perkins  
13339 Hagers Ferry Road  
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)  
Absorber 2  
Project No.: J13050177  
Sample Matrix: Water

Client Sample ID: 2013010516/2A Abs. Primary Cla  
Prism Sample ID: 3050229-02  
Prism Work Order: 3050229  
Time Collected: 05/08/13 05:35  
Time Submitted: 05/09/13 14:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>General Chemistry Parameters</b>									
pH	6.5 HT	pH Units			1	*SM4500-H B	5/10/13 15:30	JAB	P3E0210
Total Alkalinity	92	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0386
Carbonate Alkalinity	BRL	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0387
Bicarbonate Alkalinity	92	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0388



Duke Energy Corporation  
Attn: Jay Perkins  
13339 Hagers Ferry Road  
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)  
Absorber 2  
Project No.: J13050177  
Sample Matrix: Water

Client Sample ID: 2013010518/2B Abs. Primary Cla  
Prism Sample ID: 3050229-03  
Prism Work Order: 3050229  
Time Collected: 05/08/13 05:45  
Time Submitted: 05/09/13 14:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>General Chemistry Parameters</b>									
pH	6.7 HT	pH Units			1	*SM4500-H B	5/10/13 15:30	JAB	P3E0210
Total Alkalinity	66	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0386
Carbonate Alkalinity	BRL	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0387
Bicarbonate Alkalinity	66	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0388





Duke Energy Corporation  
Attn: Jay Perkins  
13339 Hagers Ferry Road  
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)  
Absorber 2  
Project No.: J13050177  
Sample Matrix: Water

Client Sample ID: 2013010521/#1 Abs. Purge -- Liq  
Prism Sample ID: 3050229-04  
Prism Work Order: 3050229  
Time Collected: 05/08/13 05:20  
Time Submitted: 05/09/13 14:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>General Chemistry Parameters</b>									
pH	7.1 HT	pH Units			1	*SM4500-H B	5/10/13 15:30	JAB	P3E0210
Total Alkalinity	50	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0386
Carbonate Alkalinity	BRL	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0387
Bicarbonate Alkalinity	50	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0388



Duke Energy Corporation  
Attn: Jay Perkins  
13339 Hagers Ferry Road  
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)  
Absorber 2  
Project No: J13050177

Prism Work Order: 3050229  
Time Submitted: 5/9/2013 2:55:00PM

**General Chemistry Parameters - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P3E0210 - NO PREP</b>									
<b>LCS (P3E0210-BS1)</b>				Prepared & Analyzed: 05/10/13					
pH	6.92		pH Units	6.880		101 99-101			
<b>LCS (P3E0210-BS2)</b>				Prepared & Analyzed: 05/10/13					
pH	6.90		pH Units	6.880		100 99-101			
<b>Duplicate (P3E0210-DUP1)</b>				<b>Source: 3050229-04</b>		Prepared & Analyzed: 05/10/13			
pH	7.13		pH Units		7.13		0	10	
<b>Batch P3E0386 - NO PREP</b>									
<b>Blank (P3E0386-BLK1)</b>				Prepared & Analyzed: 05/17/13					
Total Alkalinity	BRL	5.0	mg/L						
<b>LCS (P3E0386-BS1)</b>				Prepared & Analyzed: 05/17/13					
Total Alkalinity	253	5.0	mg/L	250.0		101 90-110			
<b>LCS Dup (P3E0386-BSD1)</b>				Prepared & Analyzed: 05/17/13					
Total Alkalinity	251	5.0	mg/L	250.0		100 90-110	0.8	200	
<b>Duplicate (P3E0386-DUP1)</b>				<b>Source: 3050229-04</b>		Prepared & Analyzed: 05/17/13			
Total Alkalinity	48.9	5.0	mg/L		49.9		2	20	
<b>Batch P3E0387 - NO PREP</b>									
<b>Blank (P3E0387-BLK1)</b>				Prepared & Analyzed: 05/17/13					
Carbonate Alkalinity	BRL	5.0	mg/L						



Duke Energy Corporation  
Attn: Jay Perkins  
13339 Hagers Ferry Road  
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)  
Absorber 2  
Project No: J13050177

Prism Work Order: 3050229  
Time Submitted: 5/9/2013 2:55:00PM

**General Chemistry Parameters - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P3E0387 - NO PREP</b>										
<b>Duplicate (P3E0387-DUP1)</b>		<b>Source: 3050229-04</b>		Prepared & Analyzed: 05/17/13						
Carbonate Alkalinity	BRL	5.0	mg/L		BRL				20	
<b>Batch P3E0388 - NO PREP</b>										
<b>Blank (P3E0388-BLK1)</b>		Prepared & Analyzed: 05/17/13								
Bicarbonate Alkalinity	BRL	5.0	mg/L							
<b>LCS (P3E0388-BS1)</b>		Prepared & Analyzed: 05/17/13								
Bicarbonate Alkalinity	253	5.0	mg/L	250.0		101	90-110			
<b>LCS Dup (P3E0388-BSD1)</b>		Prepared & Analyzed: 05/17/13								
Bicarbonate Alkalinity	251	5.0	mg/L	250.0		100	90-110	0.8	200	
<b>Duplicate (P3E0388-DUP1)</b>		<b>Source: 3050229-04</b>		Prepared & Analyzed: 05/17/13						
Bicarbonate Alkalinity	48.9	5.0	mg/L		49.9			2	20	

# CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM



Duke Energy Analytical Laboratory  
Mail Code MGO3A2 (Building 7405)  
13339 Hagers Ferry Rd  
Huntersville, N. C. 28078  
(704) 875-5245  
Fax: (704) 875-4349

1) Project Name: **Belevs Creek (Flex Fuel Absorber 2)**  
2) Client: **Wayne Chapman, Bill Kennedy**  
3) Business Unit: **BMCEFGD**  
4) Oper. Unit: **BC00**  
5) Process: **BMCEFGD**  
6) Res. Type: **10) Activity ID:**

Customer must Complete

LIMS # **13050177**  
Logged By: **BA**  
Date & Time: **5/9/13**

PRISM  
PO#144725

1.7  
Cooler Temp (C)  
Preserv: 1=HCL  
2=H2SO4 3=HNO3

SGS - Denver  
PO# 148676  
AS&C  
PO#133241

appropriate non-shaded areas.

LAB USE ONLY	11) Lab ID
	2013010513
	2013010514
	2013010515
	2013010516
	2013010517
	2013010518
	2013010519
	2013010520
	2013010521
	2013010522

Se Speciation Bottle ID	13) Sample Description or ID
	Make Up Water
	Reagent Feed Tank " -- Liquid
	Reagent Feed Tank " -- Solids
	2A Abs. Primary Class Feed -- Liquid
	2A Abs. Primary Class Feed -- Solids
	2B Abs. Primary Class Feed -- Liquid
	2B Abs. Primary Class Feed -- Solids
	Gypsum Cake -- " Belt
	#1 Abs. Purge-- Liquid
	#1 Abs. Purge - Solids

Customer to complete appropriate columns to right

1) Relinquished By: **WJC/cf** Date/Time: **5-8-13 1430**  
3) Relinquished By: **COURIER** Date/Time: **5/9/13 0930**  
5) Relinquished By: **WJC/cf** Date/Time: **5-9-13 1415**  
7) Relinquished By: **WJC/cf** Date/Time: **5/9/13 1300**  
9) Relinquished By: **WJC/cf** Date/Time: **5/9/13 1300**  
11) Relinquished By: **WJC/cf** Date/Time: **5-9-13 1455**  
12) Seal/Lock Opened By: **WJC/cf** Date/Time: **5-9-13 1455**

2) Accepted By: **COURIER** Date/Time: **5/8/13**  
4) Accepted By: **WJC/cf** Date/Time: **5/9/13 0930**  
6) Accepted By: **WJC/cf** Date/Time: **5-9-13 1415**  
8) Accepted By: **WJC/cf** Date/Time: **5-9-13 1415**  
10) Seal/Lock Opened By: **WJC/cf** Date/Time: **5-9-13 1455**  
12) Seal/Lock Opened By: **WJC/cf** Date/Time: **5-9-13 1455**

Comments: **Metals\* Water (ICP/TRM=B, Ca, Fe, Mg, Mn, K, Na, Sr IMS/TRM=Sb, Al, As, Be, Cd, Cr, Co, Ni, Pb, Se, and 1" No Hg 245.1) Anions\*\* Water (IC=Br, Cl, F, SO4) 1"-solids ICPSED=Al, Sb, As, Be, B, Ca, Cd, Cr, Cu, Co, Fe, K, Mg, Mn, Ni, Pb, Se, Sr) 1" (% Solgypsum and Dion\_GYP for Br, Cl, F, SO4**

22) Requested Turnaround  
21 Days \_\_\_ x \_\_\_ 9In-house)  
7 Days \_\_\_  
48 Hr \_\_\_  
Vendor lab 13 Days \_\_\_ X \_\_\_  
**5-22-13**

Please indicate desired turnaround.  
Customer, IMPORTANT!

19) Page 1 of 1  
DISTRIBUTION  
ORIGINAL to LAB,  
COPY to CLIENT



**APPLIED SPECIATION  
AND CONSULTING, LLC**

18804 Northcreek Parkway Bothell, WA, 98011  
Tel: (425) 483-3300 Fax: (425) 483-9818  
[www.appliedspeciation.com](http://www.appliedspeciation.com)

May 20, 2013

Jay Perkins  
Duke Energy Analytical Laboratory  
Mail Code MGO3A2 (Building 7405)  
13339 Hagers Ferry Rd.  
Huntersville, NC 28078  
(704) 875-5245

Project: Belews Creek (Flex Fuel Absorber 2) (LIMS #J13050177)

Mr. Perkins,

Attached is the report associated with four (4) aqueous samples submitted for total mercury and selenium speciation analysis on May 9, 2013. The samples were received in a sealed cooler at -0.4°C on May 10, 2013. Selenium speciation analysis was performed via ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS). Mercury quantitation was performed via cold vapor inductively coupled plasma mass spectrometry (CV-ICP-MS). Any issues associated with the analysis are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell Gerads", with a stylized, flowing script.

Russell Gerads  
Vice President  
Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report prepared for:

Jay Perkins  
Duke Energy Analytical Laboratory  
Mail Code MGO3A2 (Building 7405)  
13339 Hagers Ferry Rd.  
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel Absorber 2) (LIMS #J13050177)

May 20, 2013

## 1. Sample Reception

Three (3) aqueous samples in 125mL HDPE bottles (provided by Applied Speciation and Consulting) were submitted for selenium speciation analysis on May 9, 2013. One (1) additional sample in a 40ml borosilicate glass bottle (provided by Applied Speciation and Consulting) was submitted for total mercury quantitation. All samples were received on May 10, 2013 in a sealed container at -0.4°C.

All samples were received in a laminar flow clean hood, void of trace metals contamination and ultra-violet radiation, and were designated discrete sample identifiers. The 40mL borosilicate glass vial submitted for total mercury was preserved with bromine monochloride (BrCl) solution. The resulting sample was stored in a secure polyethylene container, known to be free from trace metals contamination, until the analyses could be performed.

An aliquot of each sample requiring selenium speciation evaluation was filtered (0.45µm) and each filtrate was stored in a secure, monitored cryofreezer (maintained at a temperature of -80°C) until selenium speciation analysis could be performed via ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS).

## 2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Total Mercury Quantitation by CV-ICP-MS All samples and preparation blanks for total mercury quantitation were preserved with 2% (v/v) BrCl. The resulting samples were analyzed for mercury via cold vapor inductively coupled plasma mass spectrometry (CV-ICP-MS).

*Selenium Speciation Analysis by IC-ICP-CRC-MS* Prior to analysis, an aliquot of each sample was filtered with a syringe filter (0.45 $\mu$ m) and injected directly into a sealed autosampler vial. No further sample preparation was performed as any chemical alteration of a sample may shift the equilibrium of the system, resulting in changes in speciation ratios.

### 3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimum interval of every ten analytical runs.

*Total Mercury Quantitation by CV-ICP-MS* The sample fractions for total mercury quantitation were analyzed by cold vapor inductively coupled plasma mass spectrometry (CV-ICP-MS) on May 14, 2013. Aliquots of each sample are reacted with a reductant in-line and transported to a gas-liquid separator. The volatile elemental mercury that is formed is then swept by a stream of argon gas into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and separated on the basis of their mass-to-charge ratio ( $m/z$ ) by a mass spectrometer. A solid-state detector detects ions transmitted through the mass analyzer and the resulting current is processed by a data handling system.

*Selenium Speciation Analysis by IC-ICP-CRC-MS* Each sample for selenium speciation analysis was analyzed by ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS) on May 15, 2013. An aliquot of each sample is injected onto an anion exchange column and mobilized by a basic ( $\text{pH} > 7$ ) gradient. The eluting selenium species are then introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (CRC) containing a reaction gas which preferentially reacts with interfering ions of the same target mass to charge ratios ( $m/z$ ). A solid-state detector detects ions transmitted through the mass analyzer and the resulting current is processed by a data handling system.

Retention times for each eluting species are compared to known standards for species identification.

#### 4. Analytical Issues

The overall analyses went well and no significant analytical issues were encountered. All quality control parameters associated with these samples were within acceptance limits.

The selenate result for the first 0.01 ug/L low standard was determined to be a statistical outlier upon application of the Grubbs test. The value for this sample was omitted from calculations used to determine the eMDL associated with selenate results.

The estimated method detection limits (eMDLs) for selenite, selenate, and selenocyanate are generated from replicate analyses of the lowest standard in the calibration curve. Not all selenium species are present in preparation blanks; therefore, eMDL calculations based on preparation blanks are artificially biased low.

The eMDL for methylseleninic acid and selenomethionine is calculated from the average eMDL of selenite, selenate, and selenocyanate. The calibration does not contain methylseleninic acid or selenomethionine due to impurities in these standards which would bias the results for other selenium species.

The eMDL for mercury has been calculated using the standard deviation of the preparation blanks preserved and analyzed concurrently with the submitted samples.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Russell Gerads', with a stylized, cursive script.

Russell Gerads  
Vice President  
Applied Speciation and Consulting, LLC



## Total Mercury &amp; Selenium Speciation Results for Duke Energy

Project Name: Belews Creek (Flex Fuel Absorber 2)

Contact: Jay Perkins

LIMS #J13050177

Date: May 20, 2013

Report Generated by: Russell Gerads

Applied Speciation and Consulting, LLC

**Sample Results**

Sample ID	Total Hg	Se(IV)	Se(VI)	SeCN	MeSe(IV)	SeMe	Unknown Se Species (n)
Make Up Water	ND (< 0.0036)	NR	NR	NR	NR	NR	NR
2A Abs. Primary Class Feed -- Liquid	NR	432	55.8	ND (< 1.1)	ND (< 1.6)	ND (< 1.6)	0.0 (0)
2B Abs. Primary Class Feed -- Liquid	NR	317	51.2	ND (< 1.1)	ND (< 1.6)	ND (< 1.6)	0.0 (0)
#1 Abs. Purge-- Liquid	NR	213	54.0	ND (< 1.1)	ND (< 1.6)	ND (< 1.6)	0.0 (0)

All results reflect the applied dilution and are reported in µg/L

NR = Analysis not requested

ND = Not detected at the applied dilution

SeCN = Selenocyanate

MeSe(IV) = Methylseleninic acid

SeMe = Selenomethionine

Unknown Se Species = Total concentration of all unknown Se species observed by IC-ICP-MS

n = number of unknown Se species observed

## Total Mercury &amp; Selenium Speciation Results for Duke Energy

Project Name: Belews Creek (Flex Fuel Absorber 2)

Contact: Jay Perkins

LIMS #J13050177

Date: May 20, 2013

Report Generated by: Russell Gerads

Applied Speciation and Consulting, LLC

**Quality Control Summary - Preparation Blank Summary**

Analyte (µg/L)	PBW1	PBW2	PBW3	PBW4	Mean	StdDev	eMDL*	eMDL 5x	eMDL 1000x
Hg	-0.0024	0.0002	-0.0004	0.0000	-0.0007	0.0012	0.0007	0.0036	-
Se(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.003	-	2.7
Se(VI)	0.000	0.000	0.000	0.000	0.000	0.000	0.001	-	1.1
SeCN	0.000	0.000	0.000	0.000	0.000	0.000	0.001	-	1.1
MeSe(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.002	-	1.6
SeMe	0.000	0.000	0.000	0.000	0.000	0.000	0.002	-	1.6

eMDL = Estimated Method Detection Limit

\*Please see narrative regarding eMDL calculations

**Quality Control Summary - Certified Reference Materials**

Analyte (µg/L)	CRM	True Value	Result	Recovery
Hg	NIST 1641d	1568	1464	93.3
Se(IV)	LCS	4.79	4.728	98.8
Se(VI)	LCS	4.74	4.677	98.7
SeCN	LCS	4.46	4.588	102.9
MeSe(IV)	LCS	3.24	2.926	90.4
SeMe	LCS	4.66	4.344	93.2

## Total Mercury &amp; Selenium Speciation Results for Duke Energy

Project Name: Belews Creek (Flex Fuel Absorber 2)

Contact: Jay Perkins

LIMS #J13050177

Date: May 20, 2013

Report Generated by: Russell Gerads

Applied Speciation and Consulting, LLC

**Quality Control Summary - Matrix Duplicates**

Analyte (µg/L)	Sample ID	Rep 1	Rep 2	Mean	RPD
Hg	Batch QC	0.0100	0.0098	0.0099	2.0
Se(IV)	Batch QC	ND (< 2.7)	ND (< 2.7)	NC	NC
Se(VI)	Batch QC	ND (< 1.1)	ND (< 1.1)	NC	NC
SeCN	Batch QC	ND (< 1.1)	ND (< 1.1)	NC	NC
MeSe(IV)	Batch QC	ND (< 1.6)	ND (< 1.6)	NC	NC
SeMe	Batch QC	ND (< 1.6)	ND (< 1.6)	NC	NC

ND = Not detected at the applied dilution

NC = Value was not calculated due to one or more concentrations below the eMDL

**Quality Control Summary - Matrix Spike/ Matrix Spike Duplicate**

Analyte (µg/L)	Sample ID	Spike Conc	MS Result	Recovery	Spike Conc	MSD Result	Recovery	RPD
Hg	Batch QC	2.000	2.078	103.4	2.000	2.105	104.8	1.3
Se(IV)	Batch QC	5560	5828	104.8	5560	5702	102.5	2.2
Se(VI)	Batch QC	5045	4825	95.6	5045	4803	95.2	0.5
SeCN	Batch QC	4575	3985	87.1	4575	4023	87.9	1.0

# CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Page 1 of 2

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DISTRIBUTION  
ORIGINAL TO LAB  
COPY TO CLIENT

<b>DUKE ENERGY</b>		<b>Duke Energy Analytical Laboratory</b>	
Mail Code MG03A2 (Building 7405) 13339 Hagers Ferry Rd Huntersville, N.C. 28078 (704) 875-5245 Fax: (704) 875-4349		Sample Class: ASHBAS Samples Originating From: NC SC	
1) Project Name: Belwe's Creek (Flex Fuel Absorber 2)		SAMPLE PROGRAM: Drinking Water	
2) Client: Wayne Chapman, Bill Kennedy		Ground Water: NPDES	
3) Business Unit: BMCEFGD		Waste: RCRA	
4) Process: BMCEFGD		Drinking Water: UST	
5) Res. Type: BC00		Cooler Temp (C): 1.7	
6) Project No: 2103010513		15 Preserv.: 1=HCL, 2=H2SO4, 3=HNO3	
7) Lab ID: 2013010513		16 Analyses: None	
8) Operator: BC00		17 Comp. Grab: Required	
9) Business Unit: BMCEFGD		18 Metals* and Hg 245.1	
10) Activity ID: 2013010513		19 Signature: W. Chapman	
11) Date: 5-8-13		20 Time: 0600	
12) Mail Code: BMCEFGD		21 Date: 5-8-13	
13) Res. Type: BC00		22 Time: 0530	
14) Project No: 2103010513		23 Date: 5-8-13	
15) Lab ID: 2013010513		24 Time: 0535	
16) Operator: BC00		25 Date: 5-8-13	
17) Business Unit: BMCEFGD		26 Time: 0545	
18) Process: BMCEFGD		27 Date: 5-8-13	
19) Res. Type: BC00		28 Time: 0545	
20) Project No: 2103010513		29 Date: 5-8-13	
21) Lab ID: 2013010513		30 Time: 0550	
22) Operator: BC00		31 Date: 5-8-13	
23) Business Unit: BMCEFGD		32 Time: 0520	
24) Process: BMCEFGD		33 Date: 5-8-13	
25) Res. Type: BC00		34 Time: 0520	
26) Project No: 2103010513		35 Date: 5-8-13	
27) Lab ID: 2013010513		36 Time: 0520	
28) Operator: BC00		37 Date: 5-8-13	
29) Business Unit: BMCEFGD		38 Time: 0520	
30) Process: BMCEFGD		39 Date: 5-8-13	
31) Res. Type: BC00		40 Time: 0520	
32) Project No: 2103010513		41 Date: 5-8-13	
33) Lab ID: 2013010513		42 Time: 0520	
34) Operator: BC00		43 Date: 5-8-13	
35) Business Unit: BMCEFGD		44 Time: 0520	
36) Process: BMCEFGD		45 Date: 5-8-13	
37) Res. Type: BC00		46 Time: 0520	
38) Project No: 2103010513		47 Date: 5-8-13	
39) Lab ID: 2013010513		48 Time: 0520	
40) Operator: BC00		49 Date: 5-8-13	
41) Business Unit: BMCEFGD		50 Time: 0520	
42) Process: BMCEFGD		51 Date: 5-8-13	
43) Res. Type: BC00		52 Time: 0520	
44) Project No: 2103010513		53 Date: 5-8-13	
45) Lab ID: 2013010513		54 Time: 0520	
46) Operator: BC00		55 Date: 5-8-13	
47) Business Unit: BMCEFGD		56 Time: 0520	
48) Process: BMCEFGD		57 Date: 5-8-13	
49) Res. Type: BC00		58 Time: 0520	
50) Project No: 2103010513		59 Date: 5-8-13	
51) Lab ID: 2013010513		60 Time: 0520	
52) Operator: BC00		61 Date: 5-8-13	
53) Business Unit: BMCEFGD		62 Time: 0520	
54) Process: BMCEFGD		63 Date: 5-8-13	
55) Res. Type: BC00		64 Time: 0520	
56) Project No: 2103010513		65 Date: 5-8-13	
57) Lab ID: 2013010513		66 Time: 0520	
58) Operator: BC00		67 Date: 5-8-13	
59) Business Unit: BMCEFGD		68 Time: 0520	
60) Process: BMCEFGD		69 Date: 5-8-13	
61) Res. Type: BC00		70 Time: 0520	
62) Project No: 2103010513		71 Date: 5-8-13	
63) Lab ID: 2013010513		72 Time: 0520	
64) Operator: BC00		73 Date: 5-8-13	
65) Business Unit: BMCEFGD		74 Time: 0520	
66) Process: BMCEFGD		75 Date: 5-8-13	
67) Res. Type: BC00		76 Time: 0520	
68) Project No: 2103010513		77 Date: 5-8-13	
69) Lab ID: 2013010513		78 Time: 0520	
70) Operator: BC00		79 Date: 5-8-13	
71) Business Unit: BMCEFGD		80 Time: 0520	
72) Process: BMCEFGD		81 Date: 5-8-13	
73) Res. Type: BC00		82 Time: 0520	
74) Project No: 2103010513		83 Date: 5-8-13	
75) Lab ID: 2013010513		84 Time: 0520	
76) Operator: BC00		85 Date: 5-8-13	
77) Business Unit: BMCEFGD		86 Time: 0520	
78) Process: BMCEFGD		87 Date: 5-8-13	
79) Res. Type: BC00		88 Time: 0520	
80) Project No: 2103010513		89 Date: 5-8-13	
81) Lab ID: 2013010513		90 Time: 0520	
82) Operator: BC00		91 Date: 5-8-13	
83) Business Unit: BMCEFGD		92 Time: 0520	
84) Process: BMCEFGD		93 Date: 5-8-13	
85) Res. Type: BC00		94 Time: 0520	
86) Project No: 2103010513		95 Date: 5-8-13	
87) Lab ID: 2013010513		96 Time: 0520	
88) Operator: BC00		97 Date: 5-8-13	
89) Business Unit: BMCEFGD		98 Time: 0520	
90) Process: BMCEFGD		99 Date: 5-8-13	
91) Res. Type: BC00		100 Time: 0520	
92) Project No: 2103010513		101 Date: 5-8-13	
93) Lab ID: 2013010513		102 Time: 0520	
94) Operator: BC00		103 Date: 5-8-13	
95) Business Unit: BMCEFGD		104 Time: 0520	
96) Process: BMCEFGD		105 Date: 5-8-13	
97) Res. Type: BC00		106 Time: 0520	
98) Project No: 2103010513		107 Date: 5-8-13	
99) Lab ID: 2013010513		108 Time: 0520	
100) Operator: BC00		109 Date: 5-8-13	
101) Business Unit: BMCEFGD		110 Time: 0520	
102) Process: BMCEFGD		111 Date: 5-8-13	
103) Res. Type: BC00		112 Time: 0520	
104) Project No: 2103010513		113 Date: 5-8-13	
105) Lab ID: 2013010513		114 Time: 0520	
106) Operator: BC00		115 Date: 5-8-13	
107) Business Unit: BMCEFGD		116 Time: 0520	
108) Process: BMCEFGD		117 Date: 5-8-13	
109) Res. Type: BC00		118 Time: 0520	
110) Project No: 2103010513		119 Date: 5-8-13	
111) Lab ID: 2013010513		120 Time: 0520	
112) Operator: BC00		121 Date: 5-8-13	
113) Business Unit: BMCEFGD		122 Time: 0520	
114) Process: BMCEFGD		123 Date: 5-8-13	
115) Res. Type: BC00		124 Time: 0520	
116) Project No: 2103010513		125 Date: 5-8-13	
117) Lab ID: 2013010513		126 Time: 0520	
118) Operator: BC00		127 Date: 5-8-13	
119) Business Unit: BMCEFGD		128 Time: 0520	
120) Process: BMCEFGD		129 Date: 5-8-13	
121) Res. Type: BC00		130 Time: 0520	
122) Project No: 2103010513		131 Date: 5-8-13	
123) Lab ID: 2013010513		132 Time: 0520	
124) Operator: BC00		133 Date: 5-8-13	
125) Business Unit: BMCEFGD		134 Time: 0520	
126) Process: BMCEFGD		135 Date: 5-8-13	
127) Res. Type: BC00		136 Time: 0520	
128) Project No: 2103010513		137 Date: 5-8-13	
129) Lab ID: 2013010513		138 Time: 0520	
130) Operator: BC00		139 Date: 5-8-13	
131) Business Unit: BMCEFGD		140 Time: 0520	
132) Process: BMCEFGD		141 Date: 5-8-13	
133) Res. Type: BC00		142 Time: 0520	
134) Project No: 2103010513		143 Date: 5-8-13	
135) Lab ID: 2013010513		144 Time: 0520	
136) Operator: BC00		145 Date: 5-8-13	
137) Business Unit: BMCEFGD		146 Time: 0520	
138) Process: BMCEFGD		147 Date: 5-8-13	
139) Res. Type: BC00		148 Time: 0520	
140) Project No: 2103010513		149 Date: 5-8-13	
141) Lab ID: 2013010513		150 Time: 0520	
142) Operator: BC00		151 Date: 5-8-13	
143) Business Unit: BMCEFGD		152 Time: 0520	
144) Process: BMCEFGD		153 Date: 5-8-13	
145) Res. Type: BC00		154 Time: 0520	
146) Project No: 2103010513		155 Date: 5-8-13	
147) Lab ID: 2013010513		156 Time: 0520	
148) Operator: BC00		157 Date: 5-8-13	
149) Business Unit: BMCEFGD		158 Time: 0520	
150) Process: BMCEFGD		159 Date: 5-8-13	
151) Res. Type: BC00		160 Time: 0520	
152) Project No: 2103010513		161 Date: 5-8-13	
153) Lab ID: 2013010513		162 Time: 0520	
154) Operator: BC00		163 Date: 5-8-13	
155) Business Unit: BMCEFGD		164 Time: 0520	
156) Process: BMCEFGD		165 Date: 5-8-13	
157) Res. Type: BC00		166 Time: 0520	
158) Project No: 2103010513		167 Date: 5-8-13	
159) Lab ID: 2013010513		168 Time: 0520	
160) Operator: BC00		169 Date: 5-8-13	
161) Business Unit: BMCEFGD		170 Time: 0520	
162) Process: BMCEFGD		171 Date: 5-8-13	
163) Res. Type: BC00		172 Time: 0520	
164) Project No: 2103010513		173 Date: 5-8-13	
165) Lab ID: 2013010513		174 Time: 0520	
166) Operator: BC00		175 Date: 5-8-13	
167) Business Unit: BMCEFGD		176 Time: 0520	
168) Process: BMCEFGD		177 Date: 5-8-13	
169) Res. Type: BC00		178 Time: 0520	
170) Project No: 2103010513		179 Date: 5-8-13	
171) Lab ID: 2013010513		180 Time: 0520	
172) Operator: BC00		181 Date: 5-8-13	
173) Business Unit: BMCEFGD		182 Time: 0520	
174) Process: BMCEFGD		183 Date: 5-8-13	
175) Res. Type: BC00		184 Time: 0520	
176) Project No: 2103010513		185 Date: 5-8-13	
177) Lab ID: 2013010513		186 Time: 0520	
178) Operator: BC00		187 Date: 5-8-13	
179) Business Unit: BMCEFGD		188 Time: 0520	
180) Process: BMCEFGD		189 Date: 5-8-13	
181) Res. Type: BC00		190 Time: 0520	
182) Project No: 2103010513		191 Date: 5-8-13	
183) Lab ID: 2013010513		192 Time: 0520	
184) Operator: BC00		193 Date: 5-8-13	
185) Business Unit: BMCEFGD		194 Time: 0520	
186) Process: BMCEFGD		195 Date: 5-8-13	
187) Res. Type: BC00		196 Time: 0520	
188) Project No: 2103010513		197 Date: 5-8-13	
189) Lab ID: 2013010513		198 Time: 0520	
190) Operator: BC00		199 Date: 5-8-13	
191) Business Unit: BMCEFGD		200 Time: 0520	
192) Process: BMCEFGD		201 Date: 5-8-13	
193) Res. Type: BC00		202 Time: 0520	
194) Project No: 2103010513		203 Date: 5-8-13	
195) Lab ID: 2013010513		204 Time: 0520	
196) Operator: BC00		205 Date: 5-8-13	
197) Business Unit: BMCEFGD		206 Time: 0520	
198) Process: BMCEFGD		207 Date: 5-8-13	
199) Res. Type: BC00		208 Time: 0520	
200) Project No: 2103010513		209 Date: 5-8-13	
201) Lab ID: 2013010513		210 Time: 0520	
202) Operator: BC00		211 Date: 5-8-13	
203) Business Unit: BMCEFGD		212 Time: 0520	
204) Process: BMCEFGD		213 Date: 5-8-13	
205) Res. Type: BC00		214 Time: 0520	
206) Project No: 2103010513		215 Date: 5-8-13	
207) Lab ID: 2013010513		216 Time: 0520	
208) Operator: BC00		217 Date: 5-8-13	
209) Business Unit: BMCEFGD		218 Time: 0520	
210) Process: BMCEFGD		219 Date: 5-8-13	
211) Res. Type: BC00		220 Time: 0520	
212) Project No: 2103010513		221 Date: 5-8-13	
213) Lab ID: 2013010513		222 Time: 0520	
214) Operator: BC00		223 Date: 5-8-13	
215) Business Unit: BMCEFGD		224 Time: 0520	
216) Process: BMCEFGD		225 Date: 5-8-13	
217) Res. Type: BC00		226 Time: 0520	
218) Project No: 2103010513		227 Date: 5-8-13	
219) Lab ID: 2013010513		228 Time: 0520	
220) Operator: BC00		229 Date: 5-8-13	
221) Business Unit: BMCEFGD		230 Time: 0520	
222) Process: BMCEFGD		231 Date: 5-8-13	
223) Res. Type: BC00		232 Time: 0520	
224) Project No: 2103010513		233 Date: 5-8-13	
225) Lab ID: 2013010513		234 Time: 0520	
226) Operator: BC00		235 Date: 5-8-13	
227) Business Unit: BMCEFGD		236 Time: 0520	
228) Process: BMCEFGD		237 Date: 5-8-13	
229) Res. Type: BC00		238 Time: 0520	
230) Project No: 2103010513		239 Date: 5-8-13	
231) Lab ID: 2013010513		240 Time: 0520	
232) Operator: BC00		241 Date: 5-8-13	
233) Business Unit: BMCEFGD		242 Time: 0520	
234) Process: BMCEFGD		243 Date: 5-8-13	
235) Res. Type: BC00		244 Time: 0520	
236) Project No: 2103010513		245 Date: 5-8-13	
237) Lab ID: 2013010513		246 Time: 0520	
238) Operator: BC00		247 Date: 5-8-13	
239) Business Unit: BMCEFGD		248 Time: 0520	
240) Process: BMCEFGD		249 Date: 5-8-13	
241) Res. Type: BC00		250 Time: 0520	
242) Project No: 2103010513		251 Date: 5-8-13	
243) Lab ID: 2013010513		252 Time: 0520	
244) Operator: BC00		253 Date: 5-8-13	
245) Business Unit: BMCEFGD		254 Time: 0520	
246) Process: BMCEFGD		255 Date: 5-8-13	
247) Res. Type: BC00		256 Time: 0520	
248) Project No: 2103010513		257 Date: 5-8-13	
249) Lab ID: 2013010513		258 Time: 0520	
250) Operator: BC00		259 Date: 5-8-13	



# CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM



## Duke Energy Analytical Laboratory

Mail Code MGO3A2 (Building 7405)  
13339 Hagers Ferry Rd  
Huntersville, N. C. 28078  
(704) 875-5245  
Fax: (704) 875-4349

## Analytical Laboratory Use Only

LIMS# <b>J13050177</b>	Sample Class <b>ASHBAS</b>	Samples Originating From NC SC
Logged By <b>RH</b>	Date & Time <b>5/9/13</b>	SAMPLE PROGRAM Ground Water NPDES Drinking Water Waste UST RCRA
Cooler Temp (C) <b>1.7</b>		

Page 1 of 1  
DISTRIBUTION 37 of 37  
ORIGINAL to LAB,  
COPY to CLIENT

1) Project Name <b>Belews Creek (Flex Fuel Absorber 2)</b>	2) Phone No:
2) Client: <b>Wayne Chapman, Bill Kennedy</b>	4) Fax No:
5) Business Unit:	6) Process: <b>BMCEFGD</b>
8) Oper. Unit: <b>BC00</b>	9) Res. Type:
	10) Activity ID:

**PRISM  
PO#144725**

**SGS - Denver  
PO# 148676**

**AS&C  
PO#133241**

appropriate non-shaded areas.

16 Analyses Required	17 Comp.	18 Grab	Metals* and Hg 245.1	Anions**	Solids = % inerts, Hg-metals_ven, (V_SGS)	TDS	Se Specification (ASC)	Hg 200.8 - (V-ASC)	TSS	CO3, HCO3 alk_other (Prism)										
None			3	4	4	4	4	5		4										
			1*	1		1		1	1	1										
			1*	1*	1															2
			1*	1*	1		1	1		1										5
			1*	1*	1		1	1		1										5
			1*	1*	1															3
			1*	1*	1															2
			1*	1*	1		1	1		1	1									5
			1*	1*	1															3

Lab, return kit to  
Wayne  
Chapman

LAB USE ONLY
11 Lab ID
2013010513
2013010514
2013010515
2013010516
2013010517
2013010518
2013010519
2013010520
2013010521
2013010522

Se Speciation Bottle ID	13 Sample Description or ID	Date	Time	Signature
	Make Up Water	5-8-13	0600	W. Chapman
	Reagent Feed Tank " " -- Liquid	5-8-13	0530	W. Chapman
	Reagent Feed Tank " " -- Solids	5-8-13	0530	W. Chapman
	2A Abs. Primary Class Feed -- Liquid	5-8-13	0535	W. Chapman
	2A Abs. Primary Class Feed -- Solids	5-8-13	0535	W. Chapman
	2B Abs. Primary Class Feed -- Liquid	5-8-13	0545	W. Chapman
	2B Abs. Primary Class Feed -- Solids	5-8-13	0545	W. Chapman
	Gypsum Cake -- " " Belt	5-8-13	0500	W. Chapman
	#1 Abs. Purge-- Liquid	5-8-13	0520	W. Chapman
	#1 Abs. Purge - Solids	5-8-13	0520	W. Chapman

1) Relinquished By <b>W. Chapman</b>	Date/Time <b>5-8-13 1430</b>	2) Accepted By: <b>COURIER</b>	Date/Time <b>5/9/13</b>
3) Relinquished By <b>COURIER</b>	Date/Time <b>5/9/13 0930</b>	4) Accepted By: <b>R. Davis</b>	Date/Time <b>5/9/13 0930</b>
5) Relinquished By	Date/Time	6) Accepted By:	Date/Time
7) Relinquished By <b>R. Davis</b>	Date/Time <b>5/9/13 1300</b>	8) Accepted By:	Date/Time
9) Seal/Locked By <b>R. Davis</b>	Date/Time <b>5/9/13 1300</b>	10) Seal/Lock Opened By	Date/Time
11) Seal/Locked By	Date/Time	12) Seal/Lock Opened By	Date/Time

Comments  
Metals\* Water (ICP/TRM=B, Ca, Fe, Mg, Mn ,K, Na, Sr IMS/TRM=Sb, Al, As, Be, Cd, Cr, Co, Ni, Pb, Se, and 1\* No Hg 245.1)  
Anions\*\* Water (IC=Br, Cl, F, SO4) 1\*-solids ICPSED=Al,Sb,As,Be,B,Ca,Cd,Cr,Cu,Co,Fe,K,Mg,Mn,Ni,Pb,Se,Sr)  
1\* (% Solgypsum and Dion\_GYP for Br, Cl, F, SO4

Customer, IMPORTANT!  
Please indicate desired turnaround.

22 Requested Turnaround  
21 Days \_\_\_ x \_\_\_ 9In-house)  
\*7 Days \_\_\_  
\*48 Hr \_\_\_  
Vendor lab 13 Days \_\_\_ X \_\_\_  
**5-22-13**